

REMARKS

This Amendment is submitted in reply to the Office Action dated April 10, 2003. Applicant respectfully requests reconsideration and further examination of the patent application under 37 C.F.R. § 1.111.

Upon entry of the foregoing Amendment claims 1-28 are pending in the application. The amendments are believed to introduce no new matter, and their entry is respectfully requested. Applicants have added independent claims 25 - 28 which are claims 13 - 15 and 20 but rewritten in independent form including all of the limitations of the base claim and any intervening claim(s). Based on the above amendment and the following remarks, Applicant respectfully requests that the Examiner reconsider and withdraw all outstanding rejections.

Summary of First Office Action

Claims 1 - 4, 6, 11, 12, 16 - 19 and 21 were rejected under 35 U.S.C. 103(a) as being unpatentable over Davidovitz US Patent 5,539,361 in view of Nusair et al. US Patent 4,973,925.

Claim 5 was rejected under 35 U.S.C. 103(a) as being upatentable over Davidovitz US Patent 5,539,361 in view of Nusair et al US Patent 4,973,925 in view of Josefsson et al. US Patent 6,081,241.

Claims 7, 9, 10 and 22 were rejected under 35 U.S.C. 103(a) as being upatentable over Davidovitz US Patent 5,539,361 in view of Nusair et al US Patent 4,973,925, both in view of Vezmar US Patent 6,081,241.

Claims 13 - 15 and 20 were objected to as being dependent on a rejected claim but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claim(s).

Summary of Amendment

Applicants have added independent claims 25 - 28 which are claims 13 - 15 and 20 but rewritten in independent form including all of the limitations of the base claim and any intervening claim(s).

Remarks regarding §103 rejections

Claims 1 - 4, 6, 11, 12, 16 - 19 and 21 were rejected under 35 U.S.C. 103(a) as being unpatentable over Davidovitz US Patent 5,539,361 in view of Nusair et al. US Patent 4,973,925. The Applicant agrees with the Examiner that Davidovitz does not teach "the insulating layer being a dielectric layer, the waveguide having at least one conducting ridge inside the waveguide channel, a second ridge, wherein a projection of a gap between the ridges on the ground plane, is traverse to the microstrip line, the waveguide channel having an elliptical/circular cross-section."

However, for the following reasons, Applicant respectfully submits that the Examiner cannot satisfy the basic requirements of a *prima facie* case of obviousness by using Davidovitz and Nusair to reject the aforementioned claims. For the Examiner to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the references. Second, there must be some reasonable expectation of success. Finally, the references when combined must teach or suggest all of the claimed limitations. Manual of Patent Examining Procedure, Section 2143. For the reasons articulated below, the Applicant believes that in the present case, the Examiner has not met this burden.

First, Applicant submits that it would not be obvious to replace the general insulating layer of Davidovitz with a dielectric layer. The Applicant submits that in the instant application, a general insulating layer is not tantamount to a dielectric layer. The Applicant states on page 8, line 31, the microstrip lines have been chosen to be 56 ohms lines, imbedded 0.254 mm above the ground plane inside a 0.8 mm thick dielectric substrate (permittivity $\epsilon = 2.33$). To have such a permittivity is integral to the design of the present invention and not possible if just a general insulating layer is used. The Applicant of the present invention has significant knowledge of dielectrics and have carefully chosen a dielectric in the present invention that would enable a given permittivity and therefore performance vis-à-vis a waveguide to microstrip transition.

Second, Applicant submits there is nothing suggesting or teaching Davidovitz providing the waveguide having at least one conducting ridge inside the waveguide channel, a second ridge, wherein a projection of a gap between the ridges on the ground plane, is traverse to the microstrip line, the waveguide channel having an elliptical/circular cross-section. Indeed, the complexities of

the requirement are set forth on page 4, line 12, which state:

“...the rectangular waveguide 12 is excited by a transverse electric electromagnetic wave, which propagates towards the end-wall 22. When it impinges on the transition discontinuity from the ridgeless portion of the waveguide to the ridged portion of the waveguide, a first reflection of the wave is created. The wave propagates further along the ridged waveguide portion, with the electromagnetic energy concentrated substantially in the gap between the ridges, until it reaches the end-wall 22, where a second reflection is caused by the end-wall 22 discontinuity. Electric currents are induced in the end-wall 22, which are disrupted by the aperture 26, causing a potential difference across the aperture 26. This creates an electric field which in turn induces currents in the strip conductor 28, thereby exciting two electromagnetic waves guided by the strip conductor 28 away from the aperture 26, while the end-wall 22 acts as a ground plane for the strip conductor 28.

The second reflected wave reflects back and forth between the discontinuities, forming a resonance from which some energy leaks away to launch a first interfering wave back into the ridgeless portion of the waveguide and a second interfering wave through the aperture to the strip conductor 28. Under matching conditions, the first interfering wave cancels the first reflected wave. In terms of the waves launched onto the strip conductor 28 through the aperture, the latter appears as a source (with a source resistance twice that of the characteristic impedance of the strip) connected in series with two strip transmission lines.”

Thus, Applicant believes that although a waveguide with a conducting ridge inside the waveguide channel may be known in the art, it is novel, and nothing teaches or suggests using it, when the waveguide of the present invention is used in a waveguide to microstrip transition.

Third, the Examiner states that it would have been obvious to one of ordinary skill in the art at the time of the invention to have the projection gap between the ridges on the ground plane, be traverse to the microstrip line since it had been held that rearranging the parts of an invention involves only routine skill in the art. However, Applicant submits that having the projection gap between the ridges on the ground plane, be traverse to the microstrip line is not obvious, but rather was a design choice to achieve the performance articulated in the instant application. Page 9, line 29 sets forth:

- For a low loss solution, impedance matching should be done in the waveguide rather than on the microstrip side, since resonant microstrip matching sections will introduce

more radiation, conductor and dielectric losses. The ridge provides a convenient means of changing the waveguide wave impedance, i.e. by varying the ridge gap d and/or the widths.

Thus, Applicant submits that mere rearranging the parts would not have achieved the aforementioned impedance changing means, but rather eloquent and novel engineering enabled the ability to change the impedance by varying the ridge gap.

Regarding the Examiner's rejection of claim 5 under 35 U.S.C. 103(a) as being unpatentable over Davidovitz US Patent 5,539,361 in view of Nusair et al US Patent 4,973,925 in view of Josefsson et al. US Patent 6,081,241 and the Examiner's rejection of claims 7, 9, 10 and 22 under 35 U.S.C. 103(a) as being unpatentable over Davidovitz US Patent 5,539,361 in view of Nusair et al US Patent 4,973,925, both in view of Vezmar US Patent 6,081,241, for the reasons articulated above and equally applicable to these rejections, Applicant respectfully submits that the Examiner has not presented any evidence where there would be a reasonable expectation of success by combining Davidovitz and Nusair et al. and Josefsson or Vezmar to teach the claimed Waveguide to Microstrip transition as claimed in claims 5, 7, 9, 10 and 22.

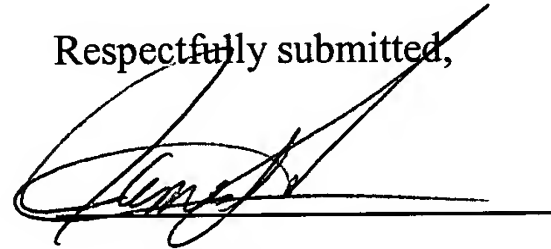
Conclusion

From the foregoing, Applicants respectfully submit that all of the stated grounds of rejections have been properly traversed, accommodated, or rendered moot. Accordingly, Applicants respectfully request that the application is in condition for allowance and respectfully request such action.

If the Examiner believes, for any reasons, that personal communication will expedite prosecution of this application the Examiner is invited to telephone the undersigned at the following number: 202-607-4607.

The USPTO is authorized to charge Deposit Account No. 502697 any fees associated with this response including the additional claims 25 - 28 and the petition for the one month extension.

Respectfully submitted,



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